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CLAIMS

1. A bipolar separator plate for use in a fuel cell, said separator plate comprising an anterior cathodic flow field, a posterior anodic flow field and manifolds for flow of reactants from the anterior cathodic flow field to the posterior anodic flow field and from the posterior anodic flow field to the anterior cathodic flow field.

2. The bipolar separator plate of claim 1 wherein the anterior cathodic flow field is at a 90 degree angle with respect to the posterior anodic flow field.

3. The bipolar separator plate of claim 1 wherein an active manifold and a passive manifold are positioned on each edge of the bipolar separator plate.

4. A fuel cell stack comprising two or more separator plates of claim 1, said separator plates being mounted in the fuel cell stack at a 90 degree angle with respect to each other.